SEQUENCE LISTING

<110> Estell, David A.

<120> Proteases From Gram-Positive Organisms

<130> GC381-US

<140> US 09/462,846
<141> 2000-01-13

<150> PCT/US98/19529
<151> 1998-07-14

<150> EP 97305227.7
<151> 1997-07-15

<160> 7

<170> FastSEQ for Windows Version 3.0

<210> 1
<211> 945
<212> DNA
<213> Bacillius subtilis

<400> 1

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gccgcgcatc aaaatggtca aagcgttgtt caaaacggaa tgtataaggg gttcacgctc     180
agcgaattat gggaacatca cagacattta ttcggacagc ttgaagggga ccgtttccct     240
ctgcttacaa aaatattaga tgctgaccag gacttatctg ttcaggtgca tccgaatgat     300
gaatatgcca acatacatga aaacggtgag cttggaaaaa cagaatgctg gtacattatt     360
gattgccaaa aagatgccga gattatttat ggccacaatg caacaacaaa ggaagaacta     420
actaccatga tagagcgtgg agaatgggat gagctcttgc gccgtgtaaa ggtaaagccg     480
ggggattttt tctatgtgcc aagcggtact gttcatgcga ttggaaaagg aattcttgct     540
ttggagacgc agcagaactc agacacaacc tacagattat atgattatga ccgaaaagat     600
gcagaaggca agctgcgcga gcttcatctg aaaaagagca ttgaagtgat agaggtcccg     660
tctattccag aacggcatac agttcaccat gaacaaattg aggatttgct tacaacgaca     720
ttgattgaat gcgcttactt ttcggtgggg aaatggaact tatcaggatc agcaagctta     780
aagcagcaaa aaccattcct tcttatcagt gtgattgaag gggagggccg tatgatctct     840
ggtgagtatg tctatccttt caaaaaagga gatcatatgt tgctgcctta cggtcttgga     900
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<210> 2
<211> 315
<212> PRT
<213> Bacillus subtilis

<400> 2

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 1               5                  10                  15
Trp Gly Gly Thr Ala Leu Ala Asp Phe Gly Tyr Thr Ile Pro Ser Gln
            20                  25                  30
Arg Thr Gly Glu Cys Trp Ala Phe Ala Ala His Gln Asn Gly Gln Ser
        35                  40                  45
```

```
Val Val Gln Asn Gly Met Tyr Lys Gly Phe Thr Leu Ser Glu Leu Trp
    50                  55                  60
Glu His His Arg His Leu Phe Gly Gln Leu Glu Gly Asp Arg Phe Pro
65                  70                  75                  80
Leu Leu Thr Lys Ile Leu Asp Ala Asp Gln Asp Leu Ser Val Gln Val
                85                  90                  95
His Pro Asn Asp Glu Tyr Ala Asn Ile His Glu Asn Gly Glu Leu Gly
            100                 105                 110
Lys Thr Glu Cys Trp Tyr Ile Ile Asp Cys Gln Lys Asp Ala Glu Ile
        115                 120                 125
Ile Tyr Gly His Asn Ala Thr Thr Lys Glu Glu Leu Thr Thr Met Ile
    130                 135                 140
Glu Arg Gly Glu Trp Asp Glu Leu Leu Arg Arg Val Lys Val Lys Pro
145                 150                 155                 160
Gly Asp Phe Phe Tyr Val Pro Ser Gly Thr Val His Ala Ile Gly Lys
                165                 170                 175
Gly Ile Leu Ala Leu Glu Thr Gln Gln Asn Ser Asp Thr Thr Tyr Arg
            180                 185                 190
Leu Tyr Asp Tyr Asp Arg Lys Asp Ala Glu Gly Lys Leu Arg Glu Leu
        195                 200                 205
His Leu Lys Lys Ser Ile Glu Val Ile Glu Val Pro Ser Ile Pro Glu
    210                 215                 220
Arg His Thr Val His His Glu Gln Ile Glu Asp Leu Leu Thr Thr Thr
225                 230                 235                 240
Leu Ile Glu Cys Ala Tyr Phe Ser Val Gly Lys Trp Asn Leu Ser Gly
                245                 250                 255
Ser Ala Ser Leu Lys Gln Gln Lys Pro Phe Leu Leu Ile Ser Val Ile
            260                 265                 270
Glu Gly Glu Gly Arg Met Ile Ser Gly Glu Tyr Val Tyr Pro Phe Lys
        275                 280                 285
Lys Gly Asp His Met Leu Leu Pro Tyr Gly Leu Gly Glu Phe Lys Leu
    290                 295                 300
Glu Gly Tyr Ala Glu Cys Ile Val Ser His Leu
305                 310                 315
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<210> 3
<211> 220
<212> PRT
<213> Bacillus subtilis

<400> 3

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Val Leu Asn Asp Gly Asp Val Asn Ile Pro Glu Tyr Val Asp Trp Arg
 1               5                  10                  15
Gln Lys Gly Ala Val Thr Pro Val Lys Asn Gln Gly Ser Cys Gly Ser
            20                  25                  30
Cys Trp Ala Phe Ser Ala Val Val Thr Ile Glu Gly Ile Ile Lys Ile
        35                  40                  45
Arg Thr Gly Asn Leu Asn Glu Tyr Ser Glu Gln Glu Leu Leu Asp Cys
    50                  55                  60
Asp Arg Arg Ser Tyr Gly Cys Asn Gly Gly Tyr Pro Trp Ser Ala Leu
65                  70                  75                  80
Gln Leu Val Ala Gln Tyr Gly Ile His Tyr Arg Asn Thr Tyr Pro Tyr
                85                  90                  95
Glu Gly Val Gln Arg Tyr Cys Arg Ser Arg Glu Lys Gly Pro Tyr Ala
            100                 105                 110
Ala Lys Thr Asp Gly Val Arg Gln Val Gln Pro Tyr Asn Glu Gly Ala
        115                 120                 125
```

```
Leu Leu Tyr Ser Ile Ala Asn Gln Pro Val Ser Val Val Leu Glu Ala
    130                 135                 140
Ala Gly Lys Asp Phe Gln Leu Tyr Arg Gly Gly Ile Phe Val Gly Pro
145                 150                 155                 160
Cys Gly Asn Lys Val Asp His Ala Val Ala Ala Val Gly Tyr Gly Pro
                165                 170                 175
Asn Tyr Ile Leu Ile Lys Asn Ser Trp Gly Thr Gly Trp Gly Glu Asn
            180                 185                 190
Gly Tyr Ile Arg Ile Lys Arg Gly Thr Gly Asn Ser Tyr Gly Val Cys
        195                 200                 205
Gly Leu Tyr Thr Ser Ser Phe Tyr Pro Val Lys Asn
    210                 215                 220
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<210> 4
<211> 948
<212> DNA
<213> Bacillus subtilis

<400> 4

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atttccgctc atccaaaagg accgagcact gttgcaaatg gcccgtataa aggaaagaca     180
ttgatcgagc tttgggaaga gcaccgtgaa gtattcggcg gcgtagaggg ggatcggttt     240
ccgcttctga caaagctgct ggatgtgaag gaagatacgt caattaaagt tcaccctgat     300
gattactatg ccggagaaaa cgaagaggga gaactcggca agacggaatg ctggtacatt     360
atcgactgta aggaaaacgc agaaatcatt tacgggcata cggcccgctc aaaaaccgaa     420
cttgtcacaa tgatcaacag cggtgactgg gagggcctgc tgcgaagaat caaaattaaa     480
ccgggtgatt tctattatgt gccgagcgga acgctgcacg cattgtgcaa gggggccctt     540
gttttagaga ctcagcaaaa ttcagatgcc acataccggg tgtacgatta tgaccgtctt     600
gatagcaacg gaagtccgag agagcttcat tttgccaaag cggtcaatgc cgccacggtt     660
ccccatgtgg acgggtatat agatgaatcg acagaatcaa gaaaaggaat aaccattaaa     720
acatttgtcc aaggggaata tttttcggtt tataaatggg acatcaatgg cgaagctgaa     780
atggctcagg atgaatcctt tctgatttgc agcgtgatag aaggaagcgg tttgctcaag     840
tatgaggaca aaacatgtcc gctcaaaaaa ggtgatcact ttattttgcc ggctcaaatg     900
cccgatttta cgataaaagg aacttgtacc cttatcgtgt ctcatatt                  948
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<210> 5
<211> 316
<212> PRT
<213> Bacillus subtilis

<400> 5

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Met Thr Gln Ser Pro Ile Phe Leu Thr Pro Val Phe Lys Glu Lys Ile
 1               5                  10                  15
Trp Gly Gly Thr Ala Leu Arg Asp Arg Phe Gly Tyr Ser Ile Pro Ser
            20                  25                  30
Glu Ser Thr Gly Glu Cys Trp Ala Ile Ser Ala His Pro Lys Gly Pro
        35                  40                  45
Ser Thr Val Ala Asn Gly Pro Tyr Lys Gly Lys Thr Leu Ile Glu Leu
    50                  55                  60
Trp Glu Glu His Arg Glu Val Phe Gly Gly Val Glu Gly Asp Arg Phe
65                  70                  75                  80
Pro Leu Leu Thr Lys Leu Leu Asp Val Lys Glu Asp Thr Ser Ile Lys
                85                  90                  95
Val His Pro Asp Asp Tyr Tyr Ala Gly Glu Asn Glu Glu Gly Glu Leu
            100                 105                 110
Gly Lys Thr Glu Cys Trp Tyr Ile Ile Asp Cys Lys Glu Asn Ala Glu
```

```
        115                 120                 125
Ile Ile Tyr Gly His Thr Ala Arg Ser Lys Thr Glu Leu Val Thr Met
    130                 135                 140
Ile Asn Ser Gly Asp Trp Glu Gly Leu Leu Arg Arg Ile Lys Ile Lys
145                 150                 155                 160
Pro Gly Asp Phe Tyr Tyr Val Pro Ser Gly Thr Leu His Ala Leu Cys
                165                 170                 175
Lys Gly Ala Leu Val Leu Glu Thr Gln Gln Asn Ser Asp Ala Thr Tyr
            180                 185                 190
Arg Val Tyr Asp Tyr Asp Arg Leu Asp Ser Asn Gly Ser Pro Arg Glu
        195                 200                 205
Leu His Phe Ala Lys Ala Val Asn Ala Ala Thr Val Pro His Val Asp
    210                 215                 220
Gly Tyr Ile Asp Glu Ser Thr Glu Ser Arg Lys Gly Ile Thr Ile Lys
225                 230                 235                 240
Thr Phe Val Gln Gly Glu Tyr Phe Ser Val Tyr Lys Trp Asp Ile Asn
                245                 250                 255
Gly Glu Ala Glu Met Ala Gln Asp Glu Ser Phe Leu Ile Cys Ser Val
            260                 265                 270
Ile Glu Gly Ser Gly Leu Leu Lys Tyr Glu Asp Lys Thr Cys Pro Leu
        275                 280                 285
Lys Lys Gly Asp His Phe Ile Leu Pro Ala Gln Met Pro Asp Phe Thr
    290                 295                 300
Ile Lys Gly Thr Cys Thr Leu Ile Val Ser His Ile
305                 310                 315
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<210> 6
<211> 945
<212> DNA
<213> Bacillus subtilis

<400> 6

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tctgcacatg cccatggctc gtcgtctgta aaaaatggcc cgctggcagg aaagacactt     180
gatcaagtat ggaaagatca tccagagata ttcgggtttc cggatggtaa ggtgtttccg     240
ctgctggtaa agctgctgga cgccaatatg gatctctccg tgcaagtcca tcctgatgat     300
gattatgcaa aactgcacga aaatggcgac cttggtaaaa cggagtgctg gtatatcatt     360
gattgcaaag atgacgccga actaattttg ggacatcatg caagcacaaa ggaagagttc     420
aaacaacgaa tagaaagcgg tgattggaac gggctgctga ggcgaatcaa aatcaagcca     480
ggagatttct tttatgtgcc aagcggtaca ctccatgctt tatgtaaggg aacccttgtc     540
cttgaaatcc agcaaaactc tgatacaaca tatcgcgtat acgattatga ccgctgtaat     600
gaccagggcc aaaaaagaac tcttcatata gaaaaagcca tggaagtcat aacgataccg     660
catatcgata aagtgcatac accggaagta aaagaagttg gtaacgctga gatcattgtt     720
tatgtgcaat cagattattt ctcagtgtac aaatggaaga ttagcggccg agctgctttt     780
ccttcatatc aaacctattt gctggggagt gttctgagcg gatcaggacg aatcataaat     840
aatggtattc agtatgaatg caatgcaggc tcacacttta ttctgcctgc gcattttgga     900
gaatttacaa tagaaggaac atgtgaattc atgatatctc atcct                     945
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<210> 7
<211> 315
<212> PRT
<213> Bacillus subtilis

<400> 7

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Met Thr His Pro Leu Phe Leu Glu Pro Val Phe Lys Glu Arg Leu Trp
 1               5                  10                  15
```

```
Gly Gly Thr Lys Leu Arg Asp Ala Phe Gly Tyr Ala Ile Pro Ser Gln
            20                  25                  30
Lys Thr Gly Glu Cys Trp Ala Val Ser Ala His Ala His Gly Ser Ser
        35                  40                  45
Ser Val Lys Asn Gly Pro Leu Ala Gly Lys Thr Leu Asp Gln Val Trp
    50                  55                  60
Lys Asp His Pro Glu Ile Phe Gly Phe Pro Asp Gly Lys Val Phe Pro
65                  70                  75                  80
Leu Leu Val Lys Leu Leu Asp Ala Asn Met Asp Leu Ser Val Gln Val
                85                  90                  95
His Pro Asp Asp Asp Tyr Ala Lys Leu His Glu Asn Gly Asp Leu Gly
            100                 105                 110
Lys Thr Glu Cys Trp Tyr Ile Ile Asp Cys Lys Asp Asp Ala Glu Leu
        115                 120                 125
Ile Leu Gly His His Ala Ser Thr Lys Glu Glu Phe Lys Gln Arg Ile
    130                 135                 140
Glu Ser Gly Asp Trp Asn Gly Leu Leu Arg Arg Ile Lys Ile Lys Pro
145                 150                 155                 160
Gly Asp Phe Phe Tyr Val Pro Ser Gly Thr Leu His Ala Leu Cys Lys
                165                 170                 175
Gly Thr Leu Val Leu Glu Ile Gln Gln Asn Ser Asp Thr Thr Tyr Arg
            180                 185                 190
Val Tyr Asp Tyr Asp Arg Cys Asn Asp Gln Gly Gln Lys Arg Thr Leu
        195                 200                 205
His Ile Glu Lys Ala Met Glu Val Ile Thr Ile Pro His Ile Asp Lys
    210                 215                 220
Val His Thr Pro Glu Val Lys Glu Val Gly Asn Ala Glu Ile Ile Val
225                 230                 235                 240
Tyr Val Gln Ser Asp Tyr Phe Ser Val Tyr Lys Trp Lys Ile Ser Gly
                245                 250                 255
Arg Ala Ala Phe Pro Ser Tyr Gln Thr Tyr Leu Leu Gly Ser Val Leu
            260                 265                 270
Ser Gly Ser Gly Arg Ile Ile Asn Asn Gly Ile Gln Tyr Glu Cys Asn
        275                 280                 285
Ala Gly Ser His Phe Ile Leu Pro Ala His Phe Gly Glu Phe Thr Ile
    290                 295                 300
Glu Gly Thr Cys Glu Phe Met Ile Ser His Pro
305                 310                 315
```